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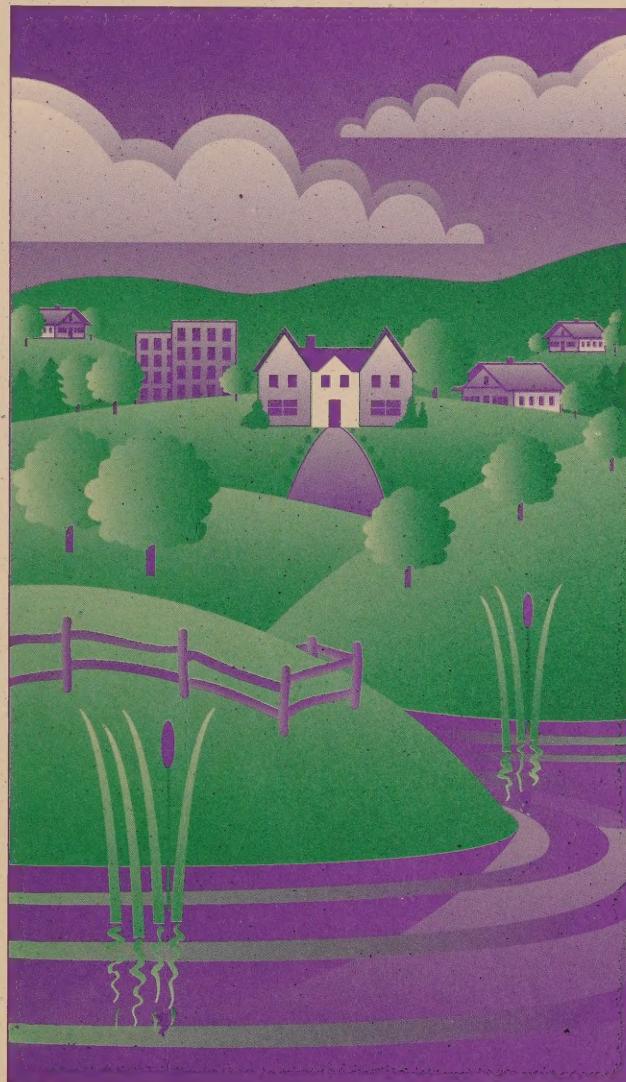
VOLUME 1

ENVIRONMENTAL LIVING:

PROTECTING THE ENVIRONMENT...

IN YOUR HOME

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MINISTRY OF  
ENVIRONMENT AND ENERGY

Ontario



VOLUME 1

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# ENVIRONMENTAL LIVING: PROTECTING THE ENVIRONMENT... IN YOUR HOME

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*For additional copies of this volume, contact:*  
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## ABOUT "ENVIRONMENTAL LIVING"

Would you like to do something to help the environment — but do you feel overwhelmed by the magnitude of the problems? Do you wonder if your efforts as an individual can make a difference?

Take heart. "Environmental Living" was written for all those people who want to protect the environment but need to know how and where to get started.

The pages of "Environmental Living" describe how to conduct your everyday activities in ways that are environmentally friendly. It's a "primer" on environmental topics that affect people who live in the city, people who live in the country and people who spend time in the great outdoors. Everything is explained in simple, easy-to-understand, easy-to-remember language.

Do you want to know how to cut down on the garbage you generate? How to start a compost heap? How to drive your car to improve its energy efficiency, lengthen its life and reduce the pollution it creates? "Environmental Living" shows you how easy it is to do all these things.

Do you live in the country — or are you thinking about buying a cottage or rural property? Do you want to learn how to look after your septic tank system? How to test for bacteria in your well water? How to build an environmentally friendly dock? "Environmental Living" looks at all these topics, and more.

Do you spend a lot of time in the great outdoors? Do you want to know how to avoid insects? What to do about zebra mussel infestations in the Great Lakes? If it's safe to eat that fish you caught? "Environmental Living" has the answers.

Living environmentally doesn't mean you have to become an environmental expert. You don't have to spend a lot of money or time. Nor do you have to make wholesale changes to your life.

No single, dramatic act by one person can save this planet. But all of us, doing a lot of simple, commonsense things, *can* save it — a little bit at a time. ■■■





## WHAT YOU'LL FIND IN "ENVIRONMENTAL LIVING"

"Environmental Living" is an unusual concept in publishing. It is one book, but it is published in five separate sections. You, the reader, decide which topics you want to read about, and you need order only those sections.

This means "Environmental Living" uses less paper, and you, the reader, don't have to wade through pages and pages of information you don't need.

To order any section of "Environmental Living", contact the Ministry of Environment and Energy by telephoning the Public Information Centre in Toronto at (416) 323-4321 or toll-free at 1-800-565-4923.

Each section of "Environmental Living" consists of several chapters that share a common theme. Every section and chapter is self-explanatory but, as you read them, you may come across references to other sections or chapters that can give you related or more detailed information. Those sections and chapters will be referred to by their complete titles, to make it easy for you to order that section.

At the end of each chapter is a list of publications you may want to read to get even more detail or technical background information; there's an explanation of where and how to obtain copies of those publications.

Here's a list of chapters in each section (a description of the chapter's contents follows, in brackets). ☀

### *Environmental Living:*

#### *Protecting the Environment ... in Your Home*

There's information of interest to everyone in this section, which has chapters about handling waste, non-toxic cleaning, how to drive to minimize pollution, and what you can do about global issues such as acid rain and global warming.

- "What a Load of Garbage!" The 3Rs (Describes the 3Rs and what to do with your garbage);
- The 3Rs, Take Two: Little Things Mean a Lot (Quick tips on practising the 3Rs);
- Cleaning Without Chemicals: Recipes for a Non-Toxic Planet (Making your own non-toxic cleaning products);
- Cleaning Without Chemicals, The Sequel: The Non-Toxic Cleaning Kit (Quick cleaning tips);
- Not Down the Drain: What to do With Household Hazardous Waste
- Water, Water Everywhere (How to conserve water);
- Your Car and the Drive for a Healthy Environment (How your driving habits affect the environment);
- Good News about Acid Rain
- Global Warming: The Gloves are Off (What you can do about global warming). ☀

## WHAT YOU'LL FIND IN "ENVIRONMENTAL LIVING"

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### *Environmental Living: Protecting the Environment ... in Your Yard and Garden*

Do you want environmental tips you can put into practice in your backyard? Read these.

- A Down-to-Earth Guide to Composting and Vermicomposting
- A Grassroots Look at Your Lawn (Growing a lawn that looks after itself);
- Those Pesky Bugs! And Other Small Hazards of the Great Outdoors (Controlling insects);
- Using Insecticides Safely
- Too Close for Comfort: What to Do About Nuisance Animals. ☀

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### *Environmental Living: Protecting the Environment ... when Building or Buying Your Dream Cottage*

If you are buying a cottage or rural property, read these.

- Before You Take the Plunge: Rural Life is Different (Adjusting to country living);
- Bylaws and Buildings: Unravelling the Red Tape (Building and zoning laws and permits);
- Dig a Well to Tap into Groundwater Supplies (How to construct a well);
- This is a Story about Sewage. Skip It and You'll Be Sorry (Disposing of sewage when there's no municipal sewer system);
- Landscaping You Can Live With (Landscaping to protect and blend into the environment and to attract wildlife). ☀

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### *Environmental Living: Protecting the Environment ... at the Cottage*

Water quality (both groundwater and lake water) is emphasized in this section.

- Testing the Waters: Bacteria and Your Drinking Water (Getting safe drinking water from your well);
- Every Cottager's Covert Operation: Maintaining that Septic Tank System (How to run your septic tank system trouble-free for years);
- Keeping Aquatic Plants Under Control for Boating and Swimming
- Stop Old Age from Ruining Your Lake (Avoiding eutrophication of your lake);
- All the Dirt on Shoreline Alterations ("Do's and don'ts" of changing the natural shoreline);
- Gimme Shelter: Building Docks and Boathouses (Environmentally friendly structures). ☀

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### *Environmental Living: Protecting the Environment ... in the Great Outdoors*

This section will interest outdoors enthusiasts.

- Campfires and Cookouts (Fire safety);
- Could Swimming in Your Lake Make You Sick? (Diseases and parasites that affect swimmers);
- Great Lakes! The Zebra Mussel Story (The spread of zebra mussels in Ontario's waterways);
- Boating and the Environment
- Goin' Fishing: Should You Eat the Catch of the Day? (Contaminants and the consumption of sport fish). ☀



## IT'S NOT GARBAGE: THE 3Rs

In Ontario, our garbage is growing on us — and it's got to stop. We're running out of places to put it all. That's why the province has a Waste Reduction Action Plan and is joining other Canadian provinces in trying to reduce the garbage we produce by half, by the year 2000.

Consider the facts:

- Every single person in Ontario is responsible for generating, both directly and indirectly, about two kilograms of trash each and every day.
- The combined residential, industrial and commercial waste created each year amounts to about one tonne for every person who lives in Ontario.
- 40 per cent of the solid waste in Ontario is generated by households.

That last figure is important, because most of our solid waste ends up in landfill sites. So what's the big deal?

The deal is that we're running out of places to *put* all that garbage. Between 1991 and 1994, Ontario will lose about 45 per cent of its annual landfill capacity. Three of the largest landfill sites — in Peel Region, Durham Region and the Keele Valley north of Toronto — are almost full.

True, there are 1,400 other usable landfill sites in Ontario. But they're much smaller and they, too, are filling up rapidly. (Not to mention we have another 2,500 sites that are *already* closed; they're full.)

We need to find ways to cut back on garbage; to use things more than once; and (last choice) to recycle as much of the rest as we can.

That's why we hear so much these days about recycling and composting and safe disposal of household hazardous waste. All of these topics are covered in *Environmental Living: Protecting the Environment ... in Your Home and Environmental Living: Protecting the Environment ... in Your Yard and Garden*.

You can also get information on waste reduction and recycling from the Recycling Council of Ontario at 489 College Street, Suite 504, Toronto, Ontario M6G 1A5. The council's toll-free telephone number for information services is 1-800-263-2849; in Toronto, its hotline for waste reduction information is (416) 960-0938.

What *can* one person do?

### *The 3Rs of Waste Management*

Reduce. Reuse. Recycle. Those are the 3Rs of waste management. They're easy to put into practice, they can save you money and they can even simplify your life — gradually you'll find you're "running out of things" less often because you have fewer disposable things around to run out of!

The first "R" is reduce. That's just a matter of not generating waste in the first place. If it's not around, you can't throw it out.



MOEE's  
*Personal Waste  
Reduction Diary*

## IT'S NOT GARBAGE: THE 3Rs

The second "R" is reuse (use again in its original form for the same purpose, or for a different one). Who says you can't refill, recharge, or repair something to use again? Or ... pass it on to a friend who can.

The third "R" is recycle. That means going one step *beyond* reusing something, by reconstituting the waste material into another product. Sometimes it's a new product similar to the original (for example, glass bottles are remade into new ones), or it's a completely different secondary product (plastic bottles are used to manufacture car bumpers).

Recycling should be the last option — something to consider when reduction and reuse are not possible.

### *Don't Get on the Waste Treadmill: How to Reduce Your Garbage*

Reducing your garbage has its advantages, not the least of which is that your wallet stays plumper longer. Reduction begins at the store: Do you really need to buy the product at all?

Think about it: Twenty-two per cent of the cost of your food is actually to pay for the wrapping around it. Thirty per cent of all the waste in your garbage is nothing more than packaging. And 64 per cent of the cost of your toiletries (perfumes, shampoo, deodorant) goes for the container, not what's inside it.

So before you buy — think!

- What are you really paying for? Is it over-packaged?
- Do you really need that particular product — or will something you already have, work just as well?
- Is there a durable or permanent product that you could buy instead? (Examples: Permanent razors

with disposable blades instead of plastic throwaways; mugs and china plates instead of foam cups and paper plates.)

- If you're only going to use it a couple of times, would it be better to borrow or rent it, rather than buy it outright?
- Can it be repaired, rather than replaced?
- Is it worth buying in bulk, or conversely, better to buy in the smallest possible quantity?

### *The Next Step: Reuse*

You can reuse things, or give them to others to reuse. During the Great Depression, people were very inventive in finding ways to stretch the use of scarce commodities. Today, we're so accustomed to a "use it, then lose it" mentality that it takes some work to recapture that earlier generation's imaginative mindset.

You can reuse things for the same purpose, or for a different one. Again, you can apply the principle right there in the store, or later, when the item is poised to go into the trash. Consider these questions:

- Is it rechargeable? Refillable? Reclaimable in its present form?
- Can someone else use it in this condition?
- Can it be donated to a charity? A school? A hospital? A community centre?
- Is it useless as a single item, but useful when collected? (Examples: As individual items, you're tempted to just throw out things such as wrapping paper, egg cartons, plastic food "tubs"; however, a *collection* of these items may be useful to day care groups or community centres that make crafts.)

## IT'S NOT GARBAGE: THE 3Rs

### *The Recycling Option*

Putting out the Blue Box is a weekly ritual in some three million Ontario households. More than 400 municipalities in Ontario have curbside recycling programs and because of them, Blue Box users divert 14 per cent of their waste from landfill sites.

Most municipal recycling programs allow you to put these items in your Blue Box: Glass containers, steel and aluminum cans, two-litre polyethylene terephthalate (PET) soft-drink bottles and high-density polyethylene (HDPE) containers such as milk jugs and water bottles and laundry product bottles. And you can also put out newspapers and corrugated cardboard. Call your public works program to find out what is accepted in your program.

The Blue Box program reaches mostly single-family houses. But the program is expanding as depots are set up in rural areas, and even in some highrise buildings in some municipalities.

How about home-based recycling of the composting kind? If you'd like to recycle by composting kitchen and yard waste, check with your municipality. Some can help you get started by providing low-cost composters.

If you think you can't compost because you live in a high-rise, or you don't have the space for or access to an outdoor compost pile, think again. You don't need a backyard to compost — nor do you need to haul composting materials outside. Instead, you can vermicompost. That's composting in small quantities with a little help from ... live worms! To get details on both methods, read "A Down-to-Earth Guide to Composting and Vermicomposting" in *Environmental Living: Protecting the Environment ... in Your Yard and Garden*.

Meanwhile, here's some food for thought on how the simple act of putting out your Blue Box helps the environment.

### *More for You to Read*

To order the Ministry of Environment and Energy publications in the list below, telephone the Public Information Centre in Toronto at (416) 323-4321 or toll-free at 1-800-565-4923. Please use the Public Information Bank System (PIBS) number to order publications.

*Be a Garbage Transformer.* Brochure. For children aged 9 - 11. Ministry of Environment and Energy. PIBS 1013b.

*Closing the Loop: The 3Rs of Waste Management.* Booklet. Ministry of Environment and Energy. ISBN 0-7729-6931-0. PIBS 1012b.

*Ontario's Waste Reduction Action Plan:*

*Backgrounder.* Information sheet. Ministry of Environment and Energy. PIBS 1600b.

*The Earth Times.* Tabloid Newspaper. For children aged 12 - 15. Ministry of Environment and Energy. PIBS 1014b.

*The Road to a Conserver Society.* Booklet. Ministry of Environment and Energy. PIBS 1630b.

*The Waste Reduction Office.* Information sheet. Ministry of Environment and Energy. PIBS 1717e.

*Your Seven Day Waste Reduction Diary.* Booklet. Ministry of Environment and Energy. PIBS 2189e. ■■■

## IT'S NOT GARBAGE: THE 3Rs

### *When You Recycle...*

### *It Becomes...*

### *Why It Helps*

Glass containers	New glass containers, glass fibre, construction materials for roads, driveways and sewers, glass beads for reflective paint	Using recycled glass instead of new glass in manufacturing can reduce energy consumption by up to 20 per cent.
Newspapers	Cereal and shoe boxes, newsprint (for more newspapers!), garden mulch, egg trays.	Recycling 54 kilograms (about 119 pounds) of newspapers saves one tree from being cut. Recycling of newspapers by the average household saves 1.5 trees a year.
Steel and aluminum cans	New cans, new consumer goods — from refrigerators to cars!	One tonne (1.1 ton) of recycled steel cans conserves 1.3 tonnes (1.43 tons) of iron ore.
Two-litre PET bottles (Non-refundable pop bottles)	Fibrefill for quilts, pillows and coat linings. Also shower stalls, skis, audio cassettes, synthetic bristles for brushes, carpets and backing for carpets.	Recycling PET, newspaper, glass, steel and aluminum to make into other products, means the average household helps save about 407 kilowatt-hours of electricity that would otherwise be used to manufacture <i>new</i> products. This energy saving means less sulphur dioxide and nitrogen oxide are emitted from thermal electrical generating stations to cause acid rain.
High-density polyethylene (HDPE) plastic containers used for milk, water, laundry product bottles	Drain pipes, plastic bags, flower boxes, clothes pins, car bumpers, "plastic lumber", the backing on carpets.	More than half of all plastic bottles are made of HDPE. After PET, HDPE is the most commonly recycled household plastic in Canada.



## THE 3Rs, TAKE TWO: LITTLE THINGS MEAN A LOT

You can improve the planet *and* save money — it's as simple as the 3Rs.

*Reducing* waste is the easiest option — don't start generating the stuff. Don't buy certain kinds of goods, or goods that are over-packaged. (Thrown-away packaging makes up about a third of all household waste!)

*Reusing* things means thinking twice before you throw something out — could it be used again for the same or a different purpose? (And when you use stuff again, that's one less time you have to buy it!)

And *recycling* (or buying a recycled product) means saving the cost of manufacturing that product "from scratch".

A few small changes in your habits can add up to more change in your pocket. Here are some fast easy ways to practise the 3Rs — and they won't cost you a cent!

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### *The First "R"*

*Reduce – Starts in the Store So Exercise Your Consumer Muscle — Go Shopping*

1. Buy food in bulk. (Bulk foods cost less — and you don't pay for fancy packaging!)
2. Buy fresh food instead of processed, canned, or "convenience" foods — less packaging to throw out, fewer additives, tastes better and healthier.
3. Don't buy food sold in "individual serving sizes" — you pay a premium, and there's a lot of waste paper and plastic



*"Buy products that display Canada's Environmental Choice Logo"*

4. Avoid buying meat, fruit and vegetables packaged in foam or plastic; buy fresh and loose.
5. Buy your fast-food from places that use recyclable containers — and that practise recycling.
6. Buy loose tea and use a teaball.
7. Buy household cleaners, deodorants, air fresheners, cooking oils, shaving creams, and so on, in pump bottles, not aerosol cans; the cans are safety hazards and they're not recyclable. You can also make your own household cleaners; see "Cleaning Without Chemicals: Recipes for a Non-Toxic Planet" and "Cleaning Without Chemicals, The Sequel: The Non-Toxic Cleaning Kit".
8. Don't buy conventional incandescent bulbs — get tungsten halogen; they use less power and last up to 2 1/2 times longer. Fluorescent lights are even better money- and power-savers!
9. Don't buy toothpaste in pump dispensers. Make your own toothpaste by adding peppermint extract to baking soda.
10. Using a microwave? Cover food with a microwave-safe lid, or use a plate, instead of plastic wrap.

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### *Reuse (Including Those Other 3Rs: Rent, Repair, Recharge)*

11. Give away stuff you never or rarely use. (Someone else can use it, and your garage will thank you.)
12. Rent or borrow things when you know you'll only use them once or twice. (Basements, garages, closets and cupboards are full of tools, gadgets, heavy equipment and clothes that only come out once a year. Who needs the clutter?)

## THE 3RS, TAKE TWO: LITTLE THINGS MEAN A LOT

13. Repair stuff before making a major financial outlay for new stuff. This works for everything from footwear to refrigerators.
14. Buy soft drinks in refillable containers — then return them.
15. Take your own containers or grocery bags to the store — over and over again.
16. Use cloth diapers. They'll cost half the cost of disposables. If washing diapers seems too much of a chore, use a diaper service — costlier than doing it yourself, yes, but still only about 75 per cent of the cost of using disposables.
17. Buy rechargeable batteries. One rechargeable battery saves as many as 250 batteries from being thrown away — although they do contain cadmium, a heavy metal that can cause kidney and liver ailments, emphysema, diseases of the bone and anemia.
18. Use cotton towels in your kitchen instead of paper ones.
19. Take off makeup with a reusable facecloth or sponge instead of cotton pads or paper tissues.
20. Buy a permanent cloth or gold mesh coffee filter.
21. Take those wire hangers that are multiplying in your closet back to the dry cleaners.
23. Save wrapping paper and bows to use on someone else's present; you can also use leftover sewing fabrics and inexpensive cottons to wrap gifts.
24. New uses for old nylon hosiery: As a stuffing for cushions or toys; as string to tie garden plants to stakes; to strain paint.
25. Use empty wax-cardboard milk cartons to: store bits and pieces of hardware; freeze soups and stews; cut in half as containers to start seeds.
26. Eggshells are also great seed-starters. Put the soil and seeds in the egg shells — when you are ready to transplant, the shell can be planted too.
27. Use empty milk bags for freezing berries and packing sandwiches.
28. Hang onto a few individual-size juice bottles and jars; you can use them over and over for pack lunches. Refill them with juice, canned fruits and the like bought in bulk (the per-serving cost is much lower).

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### Recycle

29. Use your Blue Box or take your recyclables to the recycling depot. Recycle newspapers and cardboard, glass containers (but not broken glass), aluminum and steel cans, two-litre polyethylene terephthalate (PET) soft-drink bottles and high-density polyethylene (HDPE) plastic bottles and jugs.
30. Recycle other stuff through special municipal programs, community centres, or charities: Everything from eyeglasses to telephone books.

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### *Reused, But Differently: Using Old Things in New Ways*

22. Use plastic lids from tub containers — from ice cream, yogurt, coffee, etc. — under pot plants and furniture legs to protect furniture and save floors from scratches.

## THE 3Rs, TAKE TWO: LITTLE THINGS MEAN A LOT

31. Take used motor oil to a service station for recycling, or to a used-oil collection program site, such as Canadian Tire. (Your municipality may also accept used motor oil at hazardous waste collection depots; for more information on hazardous waste, read "Not Down the Drain: What to Do with Household Hazardous Waste".)
32. Compost. Read "A Down-to-Earth Guide to Composting and Vermicomposting" in *Environmental Living: Protecting the Environment ... in Your Yard and Garden*.
33. A couple of sheets of newspaper put over your garden makes a great mulch. If you think it looks unsightly, put as many as 10 sheets down, then cover with a nicer-looking mulch, such as straw.
39. Take a lunch box to work — you can use it again and again.
40. Use a plain paper fax machine so the paper can be recycled. Re-use paper in your plain paper fax, if allowed according to manufacturer's instructions.
41. Check to see what papers are recyclable according to your specific office's fine paper recycling program — every program is different. Then post the "do's and don'ts". (Some programs, for example, can't recycle certain envelopes with address "windows".)
42. Use inter-office envelopes with button-and-string closings that can be re-addressed and resealed often. Open large envelopes carefully and reuse them, too — just cover the old address label with a new one. ■■

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### *Practising the 3Rs at the Office*

34. Use a glass coffee mug and stainless steel utensils. Get rid of foam cups, stir sticks and plastic cutlery.
35. Use electronic mail and voice mail — never lose a scribbled message again!
36. Photocopy on both sides of a sheet, if your copier allows for this.
37. Use waste paper and the backs of envelopes to make rough notes.
38. Recycle your fine papers and buy recycled paper products.



# CLEANING WITHOUT CHEMICALS: RECIPES FOR A NON-TOXIC PLANET

Why do we still pay for expensive, polluting cleaning products when it's easy to make our own at a fraction of the cost? Try these recipes.

## *A few words of caution:*

- Borax, household ammonia and hydrogen peroxide are useful for difficult cleaning jobs, but they're also more toxic than alternatives such as vinegar, baking soda and washing soda. When you use borax, ammonia, or peroxide, be sure to wear gloves and work only in a well-ventilated area.
- You might be tempted to mix household ammonia with chlorine bleach. Don't — the combination produces a deadly gas.
- Wear gloves and old, loose, clothing to protect your skin.

## *Note:*

mL means millilitres

L means litres

All non-metric measurements are Imperial.

## *All-Purpose Cleaner*

125 mL (1/2 cup) ammonia

75 mL (1/3 cup) washing soda

4 L (3 1/2 quarts) warm water

or

250 mL (1 cup) ammonia

125 mL (1/2 cup) white vinegar

50 mL (1/4 cup) baking soda

4 L (3 1/2 quarts) warm water

Mix and use this on floors, countertops, tiles and walls. Rinse all surfaces with clean water.

## *Drain Unstopper*

125 mL (1/2 cup) baking soda

50 mL (1/4 cup) white vinegar

Pour the soda, then the vinegar, down the drain.

Leave for 15 minutes.

## *Add:*

1 kettle of boiling water

## *Twice-a-Week Drain Cleaner*

50 mL (1/4 cup) baking soda

50 mL (1/4 cup) vinegar

Pour the solution down the drain, and follow up with a kettle of boiling water.

## *Brass Polish*

Dip a clean rag in vinegar, dust it with salt.

Rub the brass. Polish with a clear cloth.

## *Descaling*

One part white vinegar

Two parts water

For a kettle, boil the above. Rinse.

For an iron, pour in, let it stand a half-hour, then rinse with ordinary water several times.

## *Furniture Polish for Unvarnished Wood*

15 mL (1 tablespoon) lemon oil

1 L (0.88 quarts, or 5 cups) mineral oil

Mix the solution in a spray bottle.

Spray the mixture. Rub into wood. Wipe clean.

## CLEANING WITHOUT CHEMICALS: RECIPES FOR A NON-TOXIC PLANET

### *Furniture Polish for Varnished or Lacquered Wood*

30 mL (about 2 tablespoons) olive oil

15 mL (1 tablespoon) white vinegar

1 L (0.88 quarts, or 5 cups) warm water

Mix the solution in a spray bottle. Warm the bottle before using. Apply to furniture. Rub dry with a soft cloth.

### *Floor Polish*

500 mL (2 cups) mineral oil

15 mL (1 tablespoon) carnauba wax

(buy it at hardware or hobby stores)

Put the ingredients in a double boiler and melt together over low heat. Pour the mixture into containers, let them cool to a paste consistency.

Apply with a soft rag.

### *Silver Cleaner*

5 mL (1 teaspoon) salt

5 mL (1 teaspoon) baking soda

1 L (0.88 quarts, or 5 cups) warm water

Line a large container (e.g., an oven roaster) with aluminum foil, add the above ingredients. Put in silver. Soak. Remove the silver items as the tarnish disappears. Change the foil when it blackens.

### *Toilet Bowl Cleaner*

250 mL (1 cup) 3% hydrogen peroxide

5 mL (1 teaspoon) household ammonia

2 L (1 3/4 quarts) water

Mix ingredients in a bucket, pour the solution in the toilet. Let it stand for half an hour (longer if required). Scrub. Flush.

### *Cleaner for Really Grimy Windows and Glass*

250 mL (1 cup) white vinegar

250 mL (1 cup) household ammonia

30 mL (1/4 cup) cornstarch

4.5 L (one gallon) water

Mix the solution and apply it to windows using a squeegee.

### *Oven Cleaner*

750 mL (3 cups) boiling water

250 mL (1 cup) ammonia

Heat the oven to 100°C (212°F). Put the boiling water in a baking pan and leave it on the bottom shelf. Put the ammonia in a smaller dish on the top shelf. Close the door and leave overnight to allow baked-on foods to soften. Next day, turn off oven. Open windows to allow enough ventilation. Wash out the oven with liquid detergent and water.

To clean oven racks, put them in a large garbage bag containing up to 500 mL (2 cups) of ammonia. Leave it outside for at least two hours. Hose down the racks. ☀



## CLEANING WITHOUT CHEMICALS, THE SEQUEL: THE NON-TOXIC CLEANING KIT

Did you ever wonder how people managed before all those specialized cleaning products were invented? Trouble finding the right cleaner in the jumble of containers under the sink? And what about the expense? Below, a potpourri of ideas on how to clean without chemicals, aerosol cans, or fumes; you can say goodbye to high costs *and* that jumble under the sink, too.

1. Wash your *windows* using a mixture of 10 millilitres (two teaspoons) of vinegar and one litre (0.88 quarts, or five cups) of water from the tap.
2. Clean *fresh grease* spots on the stove by pouring table salt on them, leaving for a few minutes, and wiping clean.
3. Clean *sinks and counter* areas in the kitchen and bathroom with a paste of baking soda and water.
4. Clean the *toilet* with baking soda and mild detergent. Swish inside the bowl using a toilet brush.
5. Clean *greasy pots and pans* more easily by scouring with table salt and a dry cloth before washing.
6. Remove *hard water spots* from glass by rubbing it with a vinegar-saturated cloth. Follow with a soapy-water wash.
7. Clean *plastic wall tile* in the bathroom with a mild vinegar-and-water mixture. Dry by rubbing with an old bath towel.
8. Clean *tarnished brass* by rubbing it with lemon peel, dipped in salt. Follow up by polishing with olive oil.
9. Clean *copper* using a solution of one part salt to five parts vinegar. Or, mix equal parts of salt, flour and vinegar, leave on copper for 10 minutes, and shine with a clean cloth.
10. Remove *gummy price tags* from glass or brass by coating the spot with vegetable oil. Let it stand so the glue loosens, then rub off the tag.
11. Clean *vinyl floors* of black scuff marks by using a damp cloth and baking soda.
12. To remove *burned food from pots and pans*, pour baking soda on the mess, moisten with water, let soak overnight.
13. To get *perspiration and grass stains* out of clothes, try vinegar. It'll also remove *vegetable and fruit stains* from skin.
14. To remove *ink* of the ballpoint pen kind from clothes, rub unsalted fat (lard) into the spot and wash in soapy water. Or soak the garment in milk. If the fabric is polyester, squirt hair spray on the spot.
15. *Watermarks on wood* furniture can be removed by rubbing essence of peppermint into the mark, then polishing with a soft cloth.
16. Got *grease marks on suede*, or *salt stains on leather* footwear? Rub with a cloth dampened in vinegar.
17. Make *spot remover* for fabrics by mixing two parts water with one part rubbing alcohol.
18. Clean *leather* with a beaten egg white. Or use olive oil and buff with a soft cloth.

## CLEANING WITHOUT CHEMICALS, THE SEQUEL: THE NON-TOXIC CLEANING KIT

*Get Those Stains Out — Naturally!*

Stain	Stained Item	How to clean non-toxically
Chewing gum	Washable fabrics	Scrape off the excess, soften the remainder with egg white, launder.
Foods	Wooden cutting board	Rub the board with a mixture of table salt and lemon juice; wash and rinse.
Water Ring (left by glass/cup)	Furniture	Sprinkle the mark with salt, rub it with a cloth dipped in vegetable oil. When the stain disappears, rewax.
Fresh grease, red wine stains	Upholstery, carpets	Pour lots of salt on the new stain, rub it in with a brush. Allow it to stand for 30 minutes; vacuum.
Grease	Upholstery	Rub on a paste of baking soda and water. Let it dry, vacuum. Repeat if needed several times.
Ink	Carpets	Mix a paste of milk and cornmeal. Rub it onto the carpet, leave it for several hours; vacuum.
Tea	China	Rub the stain with some salt added to a damp cloth. Rinse with clear water.
Ink	Skin	Sprinkle the stain with salt, pour vinegar over it and rub. ☺



## NOT DOWN THE DRAIN: WHAT TO DO WITH HOUSEHOLD HAZARDOUS WASTE

Hazardous waste — and how to dispose of it safely — is only a problem for big industry and business, right? Wrong. It's a problem for householders, too. It's estimated every person in Canada throws out 23 kilograms (50 pounds) of hazardous waste every year. When you put that hazardous waste out with the rest of your household garbage, it ends up in a landfill site. When you pour it down the drain, it ends up in a sewage treatment plant or in your septic system. These are not the right places to dispose of hazardous waste.

But what *do* you do with that little bit of leftover paint thinner ... that run-down car battery ... that empty aerosol can of oven cleaner ... that outdated bottle of medicine?

Save them for Household Hazardous Waste Collection Days, or take them to a household hazardous waste depot. Many municipalities offer these options; a few will even come to your door to pick up hazardous waste, if you have enough volume. The Ministry of Environment and Energy gives grants to municipalities to assist household hazardous waste collection projects, including special collection days and permanent depots.

To get more information about these and other options, call the public works department of your municipality.

### Everyday Household Items, Their Hazards and How to Dispose of Them

We know there are several million chemicals; 50,000 have commercial uses. Another 500 to 1,000 are created every year. Almost all chemical products are hazardous in some way; most pose no threat if they're properly handled. Chemicals can be haz-

ardous if they are toxic (poisonous), corrosive (strong acids or alkalis), inflammable, explosive, leachate (penetrate and contaminate the soil), or reactive (aren't dangerous on their own but can be if they are combined with other chemicals or elements).

**Toxic waste** includes such things as over-the-counter and prescription medicines, as well as leftover pesticides.

When you buy pesticides, such as yard and garden insecticides, play it safe and buy only as much as you need. If you need to store insecticides in between



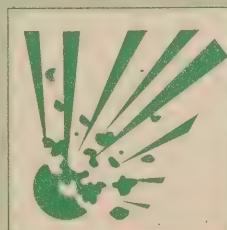
CORROSIVE:

*Substances that eat and wear away at many materials.*



FLAMMABLE:

*Flammable vapors produced by liquids that can ignite.*



EXPLOSIVE:

*Pressurized aerosol containers that may explode if incinerated or stored above 50°C.*



POISON:

*Materials that are poisonous or lethal to you, your children and your pets, even in small quantities.*

## NOT DOWN THE DRAIN: WHAT TO DO WITH HOUSEHOLD HAZARDOUS WASTE

applications, be sure to store them safely. Read the chapter on insecticide safety. When you are ready to dispose of leftover insecticides, contact your municipality for information on household hazardous waste collection.

Prescription and non-prescription medication shouldn't be flushed down the toilet but taken to a pharmacy that will dispose of them, or saved for household hazardous waste collection. (Don't flush them down the toilet, especially if you have a septic system; antibiotics could kill the bacteria that your septic tank needs to function effectively.)

*Corrosive waste* refers to strong acids or alkalis; they're commonly found in cleaning products such as oven cleaners, toilet bowl cleaners, drain cleaners, bleaches and rust removers. When you buy them, store them in a cool, dry place. Empty containers should never be reused — save them for household hazardous waste collection.

*Inflammable waste* includes gasoline, furnace and motor oil and lighter fluids. Some service stations will recycle them for you. Otherwise, save them for household hazardous waste collection.

What about those handy just-in-case items lurking in the basement or garage? We all have leftover paints and solvents, spot removers, carpet and furniture cleaners, floor and furniture polishes and glue. These should all be put in tightly sealed bags and stored or disposed of during household hazardous waste collection.

Used thinners can be reclaimed by allowing the material to settle in a well-sealed jar; pour off the clear liquid to use again and save the waste material for household hazardous waste collection.

Aerosol cans shouldn't be burned, crushed or smashed — they can explode; the contents could be poisonous, too. Similarly, don't try to dissect a bat-

tery, which could leak contaminants such as mercury or cadmium. Save all these things for proper collection.

### *Finally:*

- Don't burn hazardous materials in the fireplace or backyard.
- Don't pour hazardous materials down the drain — municipal treatment can't neutralize their effects.

If you'd like to help the environment and save money at the same time, consider that a lot of our everyday cleaning products are expensive and damaging to the environment. There are safe, cheap homemade alternatives. Read "Cleaning Without Chemicals: Recipes for a Non-Toxic Planet" and "Cleaning Without Chemicals, The Sequel: The Non-Toxic Cleaning Kit".

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### *More for You to Read*

To order the Ministry of Environment and Energy publications in the list below, telephone the Public Information Centre in Toronto at (416) 323-4321 or toll-free at 1-800-565-4923. Please use the Public Information Bank System (PIBS) number to order publications.

Inquiries about the Environment Canada publications in the list below should be directed to the toll-free number 1-800-668-6767; or call the Toronto office at (416) 973-6467.

***Hazardous Wastes in Your Home.*** Brochure/poster. Ministry of Environment and Energy. PIBS 673b.

***The Environment and Household Products.*** Fact sheet. Environment Canada. ISBN 0-662-14743-X.

***What We Can Do for Our Environment.*** Booklet. Environment Canada. ISBN 0-662-17535-2. 



## WATER, WATER EVERYWHERE

Ontarians waste a lot of water. Each household uses, on average, 300 litres of water each day. That's up to *twice* as much as the amount used by western Europeans; they use 150 to 200 litres a day. Ontario households use one-third of all the water that is processed by municipal treatment plants.

With the Great Lakes, plus more than 260,000 good-sized (at least one hectare, or 2.47 acres) freshwater lakes, at our disposal, it's a popular misconception that we have a limitless supply of water.

But those lakes supply us with *surface* water, which has to be treated before it's suitable to drink. Water treatment is expensive, and economies of scale dictate it's an option only for certain communities.

Many Ontarians actually rely on *groundwater* — the water from wells and springs — for their drinking water. And Ontario could be running out of good-quality groundwater.

Groundwater, as its name implies, is found beneath the surface of the ground. It isn't exposed to surface pollution in the way that surface waters are, so usually, groundwater doesn't need extensive treatment to make it potable. Many smaller communities in Ontario depend on groundwater for their drinking water. (There are more than 500,000 wells in use in Ontario.)

This source of drinking water is vulnerable to two threats: It can dry up through overuse, or when water isn't replenished because of conditions such as drought; and it can become contaminated.

Groundwater can become contaminated — unfit for consumption — when people allow pollutants to seep into the ground — for example, through faulty septic tank systems or by spilling hazardous chemicals.

Water Use In Ontario by Sector (in per cent)



Source: Ontario Ministry of Natural Resources, (Toronto, 1991)

Municipal Water Use in Ontario



Source: Ontario Ministry of Natural Resources, (Toronto, 1990)  
Water Demand Management in Canada, (Ottawa, 1988,9)

A single act of carelessness can contaminate the water supply for years. People who rely on a well or a spring for their drinking water understand just how direct that link is. They appreciate the direct link between the purity of their groundwater drinking supply and the way they treat the environment.

Here are some tips on how to use water wisely, and how to protect it from contamination.

# WATER, WATER EVERYWHERE

## *Conserving Water*

- It may seem obvious, but ... Turn taps off tightly, and repair leaky ones. A leaky tap losing one drop per second wastes more than 25 litres (5.5 gallons) of water each day, or 9,000 litres (almost 2,000 gallons) a year. In most cases, all you have to do is replace a worn-out washer.

### *In the Kitchen and Laundry Room*

- When you use your dishwasher or washing machine, wash when you have a full load, but don't overfill the tub.
- Use the shortest cycle possible. Save water from the rinse cycle for watering outdoor plants and washing the car and floors (but only if you use phosphate-free cleaners).
- If you wash dishes by hand, don't use a running tap to rinse. Use a spray attachment (or dip the washed dish in a tray of clear water).

### *In the Bathroom*

- In the bathroom, put an approved toilet dam in the tank so each flush will use less water. Water-saving toilets are also on the market; before you buy, check to see if they've been approved by the Canadian Standards Association and meet plumbing code standards.
- Don't use the toilet or sink to dispose of garbage.
- Don't flush cigarettes, tampons, tampon applicators (plastic and paper), sanitary napkins, condoms, dental floss, leftover paints or solvents down the toilet — they all create problems for the sewage treatment plant. (If your house is connected to a septic tank, the system can't treat these items, and some of them could end up contaminating your local water supply.)

- Don't wash your hands under a running tap. Partly fill the sink basin and use that water. You'll cut back about 60 per cent in wash water.
- Turn off the tap while you're brushing your teeth.
- Shave with a sinkful of water — don't run the tap. That's 10-20 litres ( $2\frac{1}{4}$  -  $4\frac{1}{2}$  gallons) of water just running down the drain! Better yet, use an electric razor — you'll save both water and energy. (The electric razor requires less energy than that used to heat the water for a conventional razor.)
- Install a water-saving showerhead. It can save more than 28,000 litres (6,000 gallons) of water a year!

### *In the Yard and Garden*

- Water your lawn in the early morning or late evening so your plants get more of the water — when you water in the middle of a hot summer day, a great deal of water is lost because of evaporation.
- Water your lawn every three to five days in summer — not every single day.
- Your lawn only needs five millimetres ( $\frac{1}{5}$  of an inch) of water to be well-watered. Put out a can or pan in the area being watered so you can keep track.
- Don't cut grass too short: Taller grass is healthier, better able to withstand weeds and retains water better. Cut grass to about  $6\frac{1}{2}$  centimetres ( $2\frac{1}{2}$  inches).
- Use a lawn sprinkler that conserves water.
- Collect rainwater from your eavestroughs to use in your garden.
- Wash your car with a bucket of sudsy water instead of a running hose. Hose down after soaping up the car. This uses 75 per cent less water.

## WATER, WATER EVERYWHERE

### You Can Save Groundwater from Contamination

Most people believe the causes of pollution that contaminate groundwater are beyond their control — that pollution happens on a big scale and it's caused by industrial and commercial enterprises using large quantities of chemicals, or by big farming operations using large doses of pesticides.

Many people don't realize that their individual actions can be just as damaging.

While it's usually the dramatic industrial spill that grabs the headlines, groundwater can also become contaminated by a thousand small careless actions, unwittingly repeated day in and day out by people who don't realize the cumulative effect their behavior has on the environment.

If you live in an area where you rely on groundwater for your drinking supplies, you can do a lot to protect those water supplies — and you don't have to exert a big effort to make a difference. Here are some of the things you can do from day to day to protect your groundwater supplies.

- Use non-polluting or low-phosphate dishwashing and laundry detergents. (Liquid detergents have fewer phosphates.)
- If you have a septic system, use phosphate-free products (your septic system isn't designed to treat phosphates).
- Have your septic tank inspected and pumped out every few years.
- Save your household hazardous waste (paint thinners, used motor oil, spot removers, old car batteries) for household hazardous waste collection days, or take them to a collection depot. Never put chemicals down the drain — especially if you

use a septic system. The material will eventually leach into the ground.

- Use non-toxic, biodegradable cleaners in your home.
- Don't use synthetic fertilizers on your lawn or garden.
- If you get your water directly from your own well, make sure the well is properly sealed to protect it from surface contamination.

### For More Information ....

For more detailed information on how to avoid contaminating your groundwater supplies, read these chapters:

To learn more about *biodegradable cleansers*, read "Cleaning Without Chemicals: Recipes for a Non-Toxic Planet" and "Cleaning Without Chemicals, The Sequel: The Non-Toxic Cleaning Kit".

To find out what to do with household hazardous waste, read "Not Down the Drain: What to Do with Household Hazardous Waste".

You can garden without chemicals — read "A Down-to-Earth Guide to Composting and Vermicomposting" in *Environmental Living: Protecting the Environment ... In Your Yard and Garden*.

To find out how to test your well water for bacteria, read "Testing the Waters: Bacteria and Your Drinking Water" in *Environmental Living: Protecting the Environment ... at the Cottage*.

To keep your septic system running properly, read "Every Cottager's Covert Operation: Maintaining that Septic Tank System" in *Environmental Living: Protecting the Environment ... at the Cottage*. ■



## YOUR CAR AND THE DRIVE FOR A HEALTHY ENVIRONMENT

Do you love to drive? You're not alone. Look who's on our highways and byways:

- There are more than seven million drivers in Ontario — *double* the number of 20 years ago.
- Almost 40 per cent of all vehicles registered in Canada are registered in Ontario.
- In this province, 7.4 million vehicles are on the move; 4.9 million passenger vehicles, one million commercial vehicles and 1.5 million miscellaneous vehicles, such as buses and trailers..

As a transportation-oriented society, Ontario pays an environmental price for its mobility. Our driving and other transportation habits account for *more than half of all air pollution*. On average, in one year the emissions from our cars account for a huge portion of all the pollution we put in our air — one-fifth of all nitrogen oxides, one-quarter of hydrocarbon emissions and almost half of the carbon monoxide.

These pollutants contribute directly to acid rain, smog and ozone, global warming and other chemical reactions in the atmosphere — not to mention the effect on our health.

Can we turn things around while still keeping our cars? The answer is yes.

First, and most simply, think before you drive. Do you really need to use your car for today's excursion, or would walking, biking, sharing a ride or public transportation get you there just as easily?

Second, be a responsible car owner. Be sure your vehicle is properly maintained. Drive in an environmentally sound way. Not only do you help the environment, you'll save money, your car will last longer and you'll be safer on the roads.

Here are some simple tips for drivers/car owners to help improve the state of the environment and the state of your wallet.

### ***Do You Really Need to Drive?***

- In south central Ontario, more than 70 per cent of daily work-related trips are made by private cars. Could you car-pool instead?
- Are you close to public transit? Use it to reduce not only energy use, but also the stress, expense and hassle of parking and driving in high-traffic locations.
- Walking and bicycling trim your waistline *and* cut your fuel bill.

### ***How to Maintain Your Car***

It's the burning of gasoline (fossil fuels) that causes all those damaging emissions, so the more efficiently your car runs, the less gasoline it will use.

Be sure to have your car serviced regularly. Today's cars, replete with electronic components and onboard computers, are so complex that most servicing tasks must be done by professionals. (Your car's warranty could also be invalidated if you try to perform certain maintenance tasks yourself. Check your owner's manual.)

Here are some things you (or your mechanic) can do to be sure your car is in tip-top condition. (Note: Some of the following items include under-the-hood checks. Do these only when the engine is cool.)

- Lubricate! Follow the instructions in your owner's manual so the parts that need oil, get it. Check oil levels, brakes (jack up the car and remove the wheels), power steering, transmission and differential (needs to be done over a pit) fluids. Use the correct grade of lubricant — a grade that's too thin allows excessive wear; one that's too thick requires more power (in other words, more gasoline). The

## YOUR CAR AND THE DRIVE FOR A HEALTHY ENVIRONMENT

right grade will reduce friction, improve fuel economy and allow the engine to run easily. There are summer and winter grades of oil — if you drive home from Florida in February, and you've topped up the oil down south, have it changed when you get home. They only use summer grade in the south.

- Clean dirt and debris from the front of the radiator so your car doesn't overheat. Check the radiator coolant and top it up with antifreeze if needed. Flush out and replace contaminated coolant. (To find out how to dispose of these and other hazardous wastes, read "Not Down the Drain: What to Do with Household Hazardous Waste.") All these points will help keep your engine operating at the right temperature, so it doesn't burn more gasoline than it should.
- Inspect the radiator and hoses to the radiator and heater. Look for leaks and cracks.
- Look for leaking oil and water. Check around the engine and of course, under the car, for telltale signs of broken seals or gaskets. (If your car is releasing blue smoke, it could indicate non-combustible fluids are leaking into, and contaminating, your fuel.)
- When you have your oil changed, ask for a check of all the belts — fan, air pump, air conditioner, power steering and alternator belts. If any look loose, frayed, or cracked, replace them (you can do it yourself, or have your garage do it.) Belts that slip make for inefficiently-running components.
- Is your battery in good shape? Look at the terminals to see if they're corroded (clean them with a wire battery brush). On older vehicles, in which the batteries aren't sealed, you can remove the battery caps, check the water levels and add distilled



New Tire      Wheel is Misaligned      Underinflated



Overinflated      Wheel is Unbalanced      Wheels Misaligned (incorrect toe)



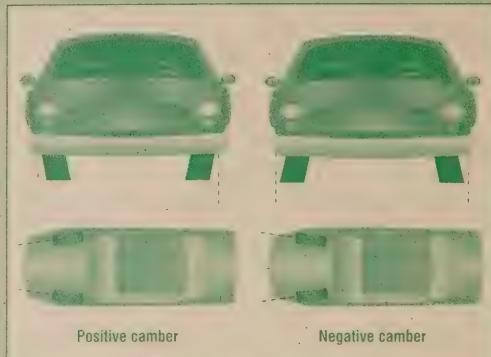
Tire Wear Patterns

water if necessary. (Don't do this in winter unless you're about to drive immediately, to avoid the risk of damage from freezing.)

- Check your tires for proper pressure and tread wear. Underinflated tires are not only dangerous, they increase rolling resistance, so your engine uses more fuel. Bald tires are illegal and must be replaced. Have the tires checked for balance, to slow down tread wear. (You can spot out-of-balance tires without leaving the driver's seat — you'll feel the steering wheel judder slightly as you drive.)

## YOUR CAR AND THE DRIVE FOR A HEALTHY ENVIRONMENT

- Take the car out for a drive and check to be sure the wheels are in proper alignment. (They're in alignment if your car doesn't veer to the right or left as you release your grip on the steering wheel while driving on a straight, flat stretch of road.) Have your wheels aligned if needed. You burn more gas, your car handles poorly, and your tires wear out sooner when your car "drags".
- Check your brakes once a month, very simply, while driving. The car shouldn't swerve when the brakes are applied gradually. Nor should the car "drag" as it coasts to a stop in neutral gear. When brakes drag, you're wasting fuel and are headed for an expensive brake job.



*Front-End Alignment*

### *Smoke Gets in Your Eyes*

*Is your pride and joy spewing smoke? Here's what it means.*

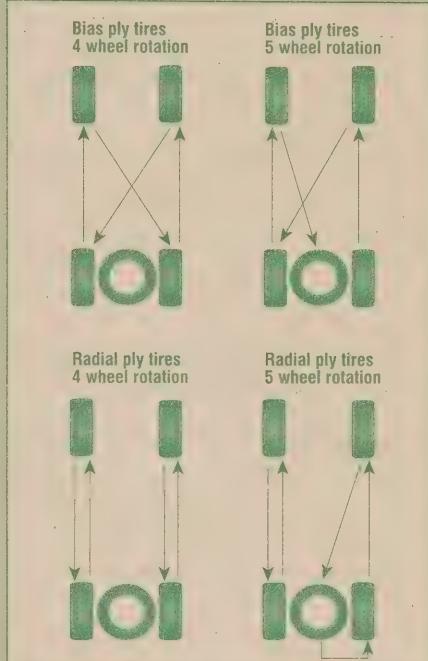
If Your Exhaust is this Color...	It Could Indicate...	What to Do
Black/dark brown	Incomplete combustion, caused by: <ul style="list-style-type: none"><li>• Excessive operating speed</li><li>• Excessive loading</li><li>• Fuel system problems (such as pumps, injection systems, filters)</li></ul>	<ul style="list-style-type: none"><li>• Correct your driving habits</li><li>• Have your car checked and overhauled by a professional</li></ul>
Blue	Unburned or partially-burned oil, caused by worn piston rings, cylinder liners and/or valve guides	<ul style="list-style-type: none"><li>• Have your car checked and overhauled by a professional</li></ul>
White	Unburned liquid fuel caused when starting or idling cold engines	<ul style="list-style-type: none"><li>• Reduce your idling time</li><li>• Use the right fuel for the climate or temperature</li><li>• Use an engine block heater</li></ul>

## YOUR CAR AND THE DRIVE FOR A HEALTHY ENVIRONMENT

### *When the Weather Changes*

In the spring and fall, the change in the weather calls for changes to your car maintenance routine. Check your owner's manual and ask your mechanic to be sure to do these routine items:

- Have your car tuned up. Regular tune-ups can cut fuel consumption by 10 per cent.
- A thorough servicing should also include checking and correcting the ignition. (A poorly-functioning ignition system gives a weak spark so the engine takes longer to start; once it does, it fires the fuel mixture less efficiently than it could.)
- Replace the air filter with a clean one. A dirty air filter can cut fuel economy by up to 10 per cent.
- Change the oil according to the manufacturer's recommendations. Change the oil filter accordingly.
- Replace spark plugs following the manufacturer's directions. Just one misfiring spark plug can cut fuel economy by 10 per cent.
- Rotate your tires according to your owner's manual.
- Ask your mechanic to check your car's emission control devices — this can be easily done by conducting an exhaust gas analysis. Check the injection system or carburetor, the exhaust gas recirculation system, the catalytic converter, the charcoal canister and the computerized engine control module. Remember, it's illegal to remove emission control devices and expensive to replace them; if you plan to resell your car, it won't qualify for safety certification without those devices.



*How to Rotate Tires*

### *Boldly Drive Through the Great Canadian Winter*

- Turn on your block heater a couple of hours before you're set to drive on cold winter mornings (use a timer). It means less idling time when you start.
- Today's cars don't need to idle for very long upon start-up — 15 to 30 seconds is enough. Then get in gear and go! The engine and drivetrain warm up better with the car in motion, but drive gently for the first few kilometres.

## YOUR CAR AND THE DRIVE FOR A HEALTHY ENVIRONMENT

- Remove snow and ice from your car before you start it. Don't carry this extra weight around.
- Take your car in for a pre-winter check. Use a lightweight multigrade oil during the fall tune-up (a heavy oil will thicken in cold winter weather, causing your engine to work harder to turn over). Check for the right grade of oil in your owner's manual.
- Driving in heavy slush or puddles? Allow extra distance to stop.
- Keep your left foot off the brake while driving. Resting your foot on the brake pedal decreases brake efficiency, reduces the life of the brake linings and makes the engine work harder than it needs to. Also, your brake lights are constantly left on — a safety hazard.

### *Behind the Wheel*

- Waiting for a tardy passenger? Just stopping to buy milk? Switch off the engine. A mere 10 seconds of idling consumes more fuel than restarting that engine.
- Driving faster uses more fuel than driving at posted speeds. In the average car, the most economical speed is 85 to 90 kilometres per hour. But when you drive above the highway limit of 100 kilometres per hour, the fuel loss is about one per cent for each km/hr increase in speed.
- Accelerate smoothly. Eliminate those jackrabbit starts; they only wear down your engine and tires and increase fuel consumption.
- Carrying stuff in the trunk "just in case I need it"? Every extra 50 kilograms of weight increases fuel consumption about one per cent.
- Combine several errands when you've got a day of driving ahead of you — it'll reduce your total mileage.
- Don't "rev" the engine before turning it off — it can cause excessive wear on the cylinder wall and contaminates the engine oil with gasoline.

### *Drivers Can "Buy Environmentally"*

- Buy the right-sized car for your needs. Bigger cars consume more fuel. Why "vaporize" your hard-earned money?
- Check the fuel economy ratings of the cars you're interested in buying — consider buying the most efficient vehicle.
- Buy radial tires to improve fuel economy — they are the most energy-efficient tires you can put on the road.
- Getting air conditioning? These days, there are alternatives to conventional air conditioning systems that use freon (which contains ozone-depleting chlorofluorocarbons); ask about those alternatives. In the meantime, have your air conditioner serviced at a station that can capture and recycle the freon.
- Practise the 3Rs (reduce, reuse, recycle) — buy re-refined motor oil — it meets the requirements of "new" oil.

### *Which Options and Accessories Waste Fuel? Which Don't?*

- A large (V8) turbocharged engine uses more fuel, but a small turbocharged engine can improve fuel economy. Similarly, a high-performance engine (high horsepower, high torque) uses more fuel than a small engine.

## YOU CAR AND THE DRIVE FOR A HEALTHY ENVIRONMENT

- What about the air conditioner? In stop-and-go traffic, air conditioner use increases fuel consumption up to 12 per cent; at highway speeds, the increase is about four per cent. (But a non-air conditioned car, driven with the windows open, increases aerodynamic drag; it will burn more fuel than an air conditioned car with the windows closed.)
- Cruise control has a small negative on fuel economy; a manual transmission can save fuel, as can manual or automatic overdrive.
- Electric rear window defrosters increase fuel consumption by about two per cent during use. Turn on defrosters and wipers only when you need them.
- Roof racks and sunroofs increase aerodynamic drag. An empty rack can increase fuel consumption up to 5 per cent; loaded, fuel consumption is increased as much as 25 per cent in highway driving.

### What About Hazardous Waste?

When you're doing your own maintenance, what should you do with all those products that are left over, or have to be changed — antifreeze, de-icers, used motor oil?

Save them for hazardous waste collection days in your municipality (read "Not Down the Drain: What to Do with Household Hazardous Waste").

Follow these guidelines:

- Never pour used motor oil down the drain — just one litre can contaminate up to two million litres of drinking water. Some service stations will accept your used oil for recycling.
- Don't crush or burn used aerosol de-icer cans — they're under pressure and may explode!
- Take car batteries to a recycling depot, or save them for special hazardous waste collection days.

### More for You to Read

To order the Ministry of Environment and Energy publications in the list below, telephone the Public Information Centre in Toronto at (416) 323-4321 or toll-free at 1-800-565-4923. Please use the Public Information Bank System (PIBS) number to order publications.

The Ministry of Transportation publications in this list can be obtained from the Transportation Energy and Productivity Office in Toronto by telephoning (416) 235-5037.

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Inquiries about the Energy, Mines and Resources Canada publications in the list below should be directed to the Toronto office at (416) 973-5814.

*Air Pollution and Auto Emissions.* Information sheet. Ministry of Environment and Energy. PIBS 1033b.

*Meteorological Aspects of Air Pollution.* Information sheet. Ministry of Environment and Energy. PIBS 637b.

*Driving for Fuel Economy — Tips from Scrooge the Econo-miser.* Pamphlet. Ministry of Transportation.

*For Better Fuel Economy Turn Here.* Pamphlet. Ministry of Transportation.

*Fuel Economy Calculator — Drive\$ave.* A scale to calculate your fuel economy. Ministry of Transportation.

*The Car Economy Book.* Booklet. Energy, Mines and Resources Canada. ISBN 0-662-18245-6.

*What We Can Do for Our Environment: The Automobile. Canada's Green Plan.* Brochure. Environment Canada. ISBN 0-662-18867-5. ■

# GOOD NEWS ABOUT ACID RAIN

## What Is Acid Rain?

When someone says "acid rain", do you immediately picture smokestacks? You've got the right idea. The development of large-scale industrial processes is what led to the acid rain phenomenon.

Acid rain (or "acidic precipitation", which also refers to snow, fog, or sleet) mostly results from industrial processes that produce sulphur and nitrogen air pollution. As sulphur and nitrogen oxides are released into the atmosphere, the wind carries them long distances. In the process, they are transformed into acidic compounds. These compounds are re-deposited on the earth. "Wet deposition" refers to rain, mist, fog, sleet and snow; "dry deposition" refers to fine particles, dust, ash and gases.

Acid rain affects human health, kills aquatic plants and animals, damages forests and corrodes manmade structures, including buildings and roads.

Sulphur dioxide ( $\text{SO}_2$ ) accounts for about two-thirds of acid precipitation in North America; nitrogen oxide ( $\text{NO}_x$ ) accounts for about one-third. Sulphur pollution results from burning coal and oil, smelting ores, using industrial furnaces and refining

petroleum. Nitrogen pollution results from vehicle exhausts and other fossil-fuelled power generation. Because most of the world burns fossil fuels, acid rain is a worldwide problem.

What's the *good* news? By the year 2000, acid-rain-causing emissions will be reduced by at least half their 1980 levels throughout most of North America.

## Acid Rain in Ontario

Acid rain has been studied since the 1950s by scientists in Sweden, Norway and the United States. Early studies that confirmed the problem extended to Ontario were published in 1975 by the Ontario Ministry of Environment and Energy.

The areas of Ontario most susceptible to acid rain are the central and northern areas. Most of the bedrock in these areas consists of the Precambrian Shield, which is mostly granite. Granite can't buffer acid rain.

In some other parts of Ontario, where limestone forms the bedrock, the resulting alkaline soils can naturally neutralize acid rain.



Long-Range Distribution of Sulphur Dioxide

## GOOD NEWS ABOUT ACID RAIN

Acid rain has an enormous impact on lakes and the creatures that live in them. Ontario has some 262,000 lakes. The Ministry of Environment and Energy estimates at least 19,000 lakes have problems supporting aquatic life because the lakes are affected by acidity. The ministry also estimates that at least 7,250 lakes are so acidified they have lost all natural ability to neutralize acid deposition; their ability to support aquatic life is severely impaired.

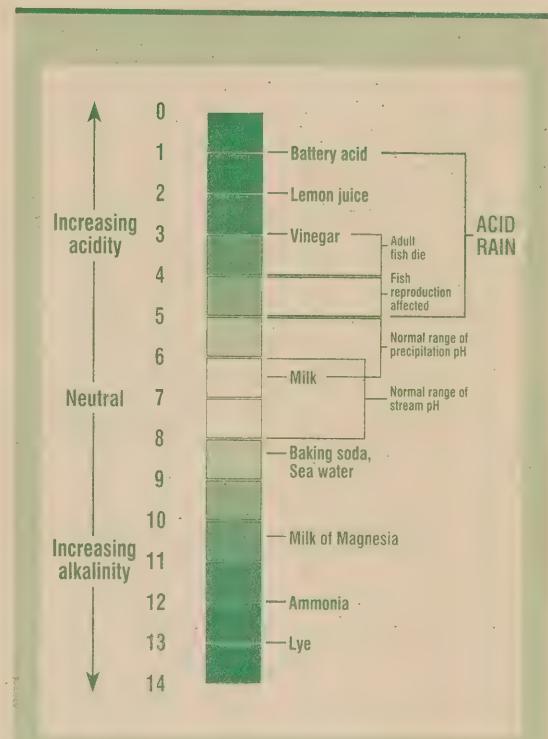
### How Acidity and Alkalinity are Measured —The pH Parameter

The acid level of a lake is measured in pH units on a scale of 0 to 14. The lower the number, the more acidic the solution.

pH is a logarithmic measure, so a one-pH unit change represents a tenfold change in acidity. So a pH of four is 10 times more acidic than a pH of five; a pH of three is 100 times more acidic than a pH of five.

A pH of 7.0 is considered neutral. Unpolluted rain is slightly acidic and has a pH of 5.6.

In some areas of southern Ontario — such as the Muskoka and Kawartha lakes — the pH of the rain is often 4.5 or 4.0. Scientists consider aquatic life to be threatened when lake water's pH falls below 6.0. (Few fish, for example, can reproduce at pH values below 5.0.)



### The pH Scale

The acidity of water sample is measured on a pH scale. This scale ranges from 0 (maximum acidity) to 14 (maximum alkalinity). The middle of the scale, 7, represents the neutral point. The acidity increases from neutral toward 0.

Because the scale is logarithmic, a difference of one pH unit represents a tenfold change. For example, the acidity of a sample with a pH of 5 is ten times greater than that of a sample with a pH of 6. A difference of 2 units, from 6 to 4, would mean that the acidity is one hundred times greater, and so on.

Normal rain has a pH of 5.6 — slightly acidic because of the carbon dioxide picked up in the earth's atmosphere by the rain.

## GOOD NEWS ABOUT ACID RAIN

### *How Acidity Kills Life in a Lake*

Here's what you would see if you could witness first-hand the damage that takes place in a lake because of acid rain. During winter, acid snow falls and collects on and around the lake. In the spring, the snow melts, and its acid content causes a sudden, rapid drop in the pH of the lake. This change, from a normal pH of 6.8 to 4.0, has an immediate effect: It interferes with the reproduction of many species. For example, the eggs of leopard frogs spawning in these pools of meltwater will fail to hatch.

Gradually, over two or three years, ongoing acid precipitation will continue to lower the overall lake pH to 5.6. Common species of crayfish die as parasites take over their weakened bodies. Fathead minnows and white suckers die. The opossum shrimp die. In turn, the lake trout that feed on them die, too.

Over the next few years, you'll still see adult fish in the lake. But these are the same fish, getting older and older — and they're not replenishing their numbers.

Gradually, smaller species such as snails, mayflies and stoneflies, bullfrogs and spotted salamander, will also disappear. The last fish to go will be the acid-rain-resistant species such as yellow perch and lake chub.

As lakes acidify and aquatic species die out, the birds and animals that feed on them will be affected by the disruption to the natural food chain.

Some life, however, will actually *thrive* in this environment. Slimy algal "blooms" will appear in the water. Secondary algae will grow, making the lake smell like something is rotting.

### *Acid Rain — Or Nutrient Enrichment?*

A word of warning: If you live near a lake that seems to be "choking up" with excessive aquatic plant growth (either macrophytes — rooted water plants — or algae, or both), don't assume acid rain is the cause and that you can't do anything about it.

It's more likely the lake is affected by *nutrient enrichment* — too many nutrients, particularly phosphorus, are getting into the water. The source? You and your neighbors may be loading the lake with phosphorus, found in garden fertilizers and in some dishwashing and laundry detergents.

You may be compounding the problem by clearing away trees and "cleaning up" the shoreline by cutting back natural vegetation.

Read "Stop Old Age from Ruining Your Lake" in *Environmental Living: Protecting the Environment ... at the Cottage* to find out how you can stop doing this damage to your lake.

## GOOD NEWS ABOUT ACID RAIN

### *Stopping Acid Rain at its Source*

The place to stop acid rain is at its source, by reducing emissions of sulphur dioxide and nitrogen oxide. Borne by the wind, these pollutants can travel great distances to cause acid precipitation hundreds of kilometres from their source.

Because acid rain transcends provincial boundaries, Canada and the provinces have agreed on an acid rain control program. The agreement sets emission standards that will cut acid-rain-causing emissions from sources within eastern Canada to half of 1980 levels, by 1994.

In the 1970s, Ontario's sulphur dioxide emissions were cut in half as a result of the enactment of the Environmental Protection Act.

Ontario's current abatement program, "Countdown Acid Rain" will, by 1994, reduce the province's emissions of sulphur dioxide by about 60 per cent of 1980 base levels.

In 1990, the United States amended its federal Clean Air Act, introducing more stringent air pollution controls. The act includes a specific response to the acid rain issue: It calls for a 50 per cent reduction of the United States' 1980 sulphur dioxide emissions by the year 2000.

### *Going Fishing? How to Find Out Which Lakes are Acidic*

The Ministry of Environment and Energy has tested the natural acid-neutralizing capacity of some 6,700 lakes in Ontario. The results are in the ministry booklet, "Acid Sensitivity of Lakes in Ontario Guide".

In the guide, lakes are ranked according to their sensitivity to acidification. "Level 5" lakes are not affected by acid rain, while "Level 1" lakes are acidic and support few, if any, fish species.

To order the guide, read on.

## GOOD NEWS ABOUT ACID RAIN

### More for You to Read

To order the Ministry of Environment and Energy publications in the list below, telephone the Public Information Centre in Toronto at (416) 323-4321 or toll-free at 1-800-565-4923. Please use the Public Information Bank System (PIBS) number to order publications.

To order the Ministry of Natural Resources publications in the list below, telephone the Public Information Centre in Toronto at (416) 314-1177.

Inquiries about the Environment Canada publications in the list below should be directed to the toll-free number 1-800-668-6767; or call the Toronto office at (416) 973-6467.

*Acid Rain in Ontario.* Brochure. Ministry of Environment and Energy. PIBS 1735b.

*Acid Rain - Ontario's Fisheries.* Booklet. Ministry of Natural Resources.

*Acid Rain Studies at Plastic and Harp Lakes.* Ministry of Environment and Energy. PIBS 662b.

*Acid Rain: The Facts.* Canada's Green Plan. Brochure. Environment Canada.

*Acid Sensitivity of Lakes in Ontario Guide.* Booklet. Ministry of Environment and Energy. ISSN 0833-546X. PIBS 1696b.

*The Canadian Acid Rain Control Program.*

*Canada's Green Plan.* Information sheet. Environment Canada.

*Countdown Acid Rain - Acidification - Warning Signs.* Ministry of Environment and Energy. PIBS 649e.

*How Acid Rain Affects Forests, Crops and Wildlife.* Information sheet. Ministry of Environment and Energy. PIBS 1736b.

*The Human Health Effects of Acid Rain.*

Information sheet. Ministry of Environment and Energy. PIBS 1029b.

*New Evidence for Acid Rain Fight.* Information sheet. Ministry of Environment and Energy. PIBS 650b.



## GLOBAL WARMING: THE GLOVES ARE OFF

Which of the things on the following list don't belong there?

- Ozone depletion
- Global warming
- Greenhouse effect
- Air pollution

If you said "greenhouse effect", you're right. Many people confuse the greenhouse effect (a natural atmospheric phenomenon) with conditions that affect it, such as global warming and air pollution.

The greenhouse effect refers to a natural atmospheric condition which maintains the earth's temperature at levels that support life on this planet. Naturally occurring gases, including carbon dioxide, create a "shield" in the earth's atmosphere to contain heat, just as the glass of a greenhouse does. Energy from the sun penetrates this shield, hits the earth, and is reflected back as heat. Some of that reflected heat is trapped in the shield, some radiates into space. Greenhouse gases regulate just how warm the earth stays.

But greenhouse gases are building up in the atmosphere, making the earth warmer than it should be. Air pollution makes those greenhouse gases — including carbon dioxide, methane, nitrous oxide, chlorofluorocarbons and ozone — build up. The results of this global warming could be devastating.

### Where Do Greenhouse Gases Come From?

One of the consequences of 20th-century industrial activity is that we are producing huge quantities of these natural greenhouse gases, especially CO<sub>2</sub>.

As a result, the concentration of CO<sub>2</sub> in the atmosphere is increasing. Too much heat is being contained within the atmosphere.

Here's a list of the major greenhouse gases. You're probably familiar with most of them, because they're part of our everyday lives.

**Carbon dioxide (CO<sub>2</sub>)** is the principal greenhouse gas. We create it when we burn fossil fuels — by heating our homes, by driving our cars, and in manufacturing processes. We also allow it to escape when we cut down trees, which would otherwise capture and retain excess levels of carbon dioxide. Carbon dioxide accounts for 55 per cent of the global warming problem.

**Methane (CH<sub>4</sub>)** is released in agricultural activities (for example, by rice paddies and by cattle), in the production of coal and natural gas, by gas leaking from landfill sites, and by burning wood. The concentration of methane in the atmosphere has doubled in the past 200-300 years. Methane accounts for 15 per cent of the global warming problem.

**Nitrous oxide (N<sub>2</sub>O)** is released by the burning of vegetation and fossil fuels and by the release of nitrogen in fertilizers. It accounts for six per cent of the global warming phenomenon.

**Ozone (O<sub>3</sub>)**, not to be confused with the *ozone layer*, is also a major greenhouse gas. Its role in global warming is not well understood.

## GLOBAL WARMING: THE GLOVES ARE OFF

*Chlorofluorocarbons (CFCs)* occur in small but potent concentrations; they account for up to 11 per cent of the factors causing global warming. CFCs are a family of synthetic chemicals containing carbon, chlorine and fluorine. CFCs not only contribute to global warming, they also weaken the earth's protective ozone layer, allowing harmful ultraviolet radiation to reach the surface of the earth.

Now banned in the manufacture of rigid foam packaging and as aerosol propellants, CFCs are still found in air conditioners and refrigerators. They're also used as blowing agents for other foam products, as cleaning solvents and in sterilization procedures.

In 1987, the first agreement to control CFCs (the Montreal Protocol for Substances that Deplete the Ozone Layer) was signed. Since then, it has been ratified by 82 countries.

Canada will phase out all production and importation of CFCs by 1996.

Ontario was the first province in Canada to pass legislation supporting the Montreal Protocol. Aerosols and foam packaging made with CFCs were banned, beginning July 1, 1989; by the end of 1993 foam-blown packaging will be phased out completely. Beginning September 17, 1990, all CFCs from stationary sources (such as home refrigerators) were required to be recycled. Beginning July 1, 1991, recycling also became mandatory from mobile sources, such as car air conditioners. The goal is to reduce Ontario's consumption of CFCs by more than half by 1993, and to recover and reuse CFCs for as long as this is required for existing equipment that already use CFCs.

### How Does Global Warming Affect Us?

The World Meteorological Organization and the United Nations Environmental Program jointly sponsor the Intergovernmental Panel on Climate Change, which predicts global mean temperatures will increase about 1° Celsius from present levels, by the year 2025, and 3° Celsius before the end of the next century.

The earth hasn't experienced increases like this in 160,000 years. What will happen to the earth's biosphere if these predictions come true?

Land-based ice will melt and ocean levels will rise. As the seas rise, coastal shores will erode, salt water will invade freshwater systems and wetlands will be flooded.

Inland, floods — and droughts — will occur. Soil will erode to cause environmental and agricultural problems. The geographic distribution of plants and animals will alter. Disease-carrying insects that currently only live in southern or tropical climates will be able to survive in more northern regions — and will introduce those diseases to northern populations.

## GLOBAL WARMING: THE GLOVES ARE OFF

### What Can We Do About Global Warming?

We need to reduce the creation and release of greenhouse gases. On a more personal level, what can individuals do to cut down on greenhouse gas emissions?

- **Reduce the amount of energy you use.** Reduce your use of electricity and water. Use energy-efficient appliances. Walk, bicycle, share the car with other passengers or use public transit — just drive your car less often. Keep your car in tune. (Read "Your Car and the Drive for a Healthy Environment".)
- **Practise the 3Rs.** Reduce your need for manufactured goods and the waste they generate in their manufacture. Cut down on buying goods manufactured using fossil fuels. Reuse things instead of throwing them out — conserve the resources you already have. Recycle products so they can be made into something else. Put less pollution-causing garbage in our landfill sites!
- **Refuse to use or buy** products that are environmentally harmful, are unnecessary or wasteful.
- **Plant trees.** Trees can "sequester" (absorb and store) huge amounts of carbon dioxide, and in turn can generate oxygen.

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Inquiries about the Environment Canada publications in the list below should be directed to the toll-free number 1-800-668-6767; or call the Toronto office at (416) 973-6467.

#### *About Global Warming and Greenhouse Gases.*

Information sheet. Ministry of Environment and Energy. PIBS 1737b.

*Canada's Green Plan — Summary.* Booklet. Environment Canada. ISBN 0-662-57977-1.

*Canada's Green Plan — The First Year.* Booklet. Environment Canada. ISBN 0-662-19288-5.

*Ozone-Depleting Substances.* Information sheet.

Ministry of Environment and Energy. PIBS 1015b.



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